Md Monjurul Karim

Ph.D. in Computer Science and Technology

Shenzhen Institute of Advanced Technology,
1068 Xueyuan Avenue,
Shenzhen, Guangdong
Wechat: explorer13
☎ *+86 132 6189 0899*
✉ *karim.npu@outlook.com*

Education

Sep 2016 - June 2023 **Ph.D. in Computer Science and Technology**, *School of Computer Science*, Beijing Institute of Technology (**BIT**), Beijing, China.
- Average: 90%
- Advisor: Prof. Zhu Liehuang
- **Thesis: Research on QoS-aware Software-Defined Information-Centric Networking Solutions**

Sep 2012 - Mar 2015 **M.Eng. in Computer Science and Technology**, *School of Computer Science*, Northwestern Polytechnical University (**NWPU**), Xi'an, China.
- Average: 77.75%
- Advisor: Prof. Yao Ye
- **Thesis: Source Code-based Buffer Overflow Detection**

Sep 2008 - Jul 2012 **B.Eng. in Computer Science and Technology**, *School of Computer Science*, Northwestern Polytechnical University (**NWPU**), Xi'an, China.
- Average: 76.96%
- Advisor: Prof. Jiang Xuefeng
- **Thesis: Packet Filtering Technique in IPv6 Networking Environment**

Sep 2007 - June 2008 **Comprehensive Chinese Language Program**, *School of International Education*, Tianjin University (**TJU**), Tianjin, China.
- Organized by **Chinese Scholarship Council (CSC)**

Employment

Nov. 2023 - Current (Full-time) **Postdoctoral Research Fellow**, *Shenzhen Institute of Advanced Technology, Chinese Academy of Sciences (**SIAT**)*, **Shenzhen**, **China**.
- **Project: Sustainability of DeFi**
- Analyzing the economic and financial implications of DeFi
- Investigating DeFi protocols, e.g., smart contracts, liquidity pools, and lending platforms

Jul. 2021 - Sep. 2023 (Full-time) **Research and Teaching Assistant**, *Research Institute of Trustworthy Autonomous Systems, Southern University of Science and Technology (**SUSTech**)*, **Shenzhen**, **China**.
- **Project: Distributed Resource Management for the Integrated Blockchain-Mobile Edge Computing System**
- Assisting in the preparation of scientific journal and conference manuscripts
- Peer reviewing scientific journals and conferences
- Participating in national project preparation and development
- Assisting in the delivery of educational materials, including lectures, assignments, and laboratory exercises

Jul. 2015 - Jul. 2016 (Full-time) **Network Engineer**, *SRK ShowTime*, Dhaka, Bangladesh.
- Troubleshooting malfunctions of the operating system, networking hardware, and security systems
- Supervising the administration of systems and servers to ensure the availability of services
- Managing assigned projects and program components to deliver services
- Responding to inquiries from administrators, service providers, site personnel, and outside vendors

Feb. 2015 - Mar. 2015 (Internship) **Network Engineer**, ***Ericsson*** *Information Communication Ltd.*, **Xi'an**, **China**.
- **Project: Radio Access Network Design and Optimization**
- Supported planning and coordinating activities with customers Worldwide
- Performed integration and network rollout activities of WCDMA RAN nodes

Jun. 2011 - Jul. 2011 (Internship) **Software Developer**, *Insigma (浙大网新)*, **Hangzhou**, **China**.
- **Project: Integrated Hospital Patient Data Management Solution**
- Developed C++ and MFC Application to maintain medical information (e.g., personal details, diagnosis reports, billing)

Research Interests

Software-Defined Networking; Edge Computing; Blockchain; Information-Centric Networking; Next-Generation Networking.

Selected Publications (DBLP) (Google Scholar) H-Index:8

TVT 2023 JCR-Q1, IF-6.8 **Traffic Flow Optimization for UAVs in Multi-Layer Information-Centric Software-Defined FANET**.
L. Zhu, M.M. Karim, K. Sharif, C. Xu, and F. Li
IEEE Transactions on Vehicular Technology, Vol. 72, No. 2, PP. 2453-2467, Feb. 2023. DOI

ComNet 2022 CCF-B, IF-5.6 **Forwarding and caching in video streaming over ICSDN: A clean-slate publish-subscribe approach**.
M.W.A. Ashraf, C. Huang, A. Raza, K. Sharif, M.M. Karim, and S. Huang
Elsevier Computer Networks, Vol. 219, P. 109433, December 2022. DOI

ICDCS 2022 CCF-B **Lagrange Coded Federated Learning (L-CoFL) Model for Internet of Vehicles**.
W. Ni, S. Zhu, M.M. Karim, A. Asheralieva, J. Kang, Z. Xiong, and C. Maple
Proceedings of IEEE 42nd International Conference on Distributed Computing Systems, 2022. DOI

ICC Workshops 2022 Core-B **User-Centric Blockchain for Industry 5.0 Applications**.
H. Yang, A. Asheralieva, J. Zhang, M.M. Karim, D. Niyato, and K.A. Raza
Proceedings of IEEE International Conference on Communications Workshop on Scalable, Secure and Intelligent Blockchain for Future Networking and Communications, 2022. DOI

GC Wkshps 2021 Core-B **Secure Federated Learning Based on Coded Distributed Computing**.
S. Zhu, A. Asheralieva, M.M. Karim, D. Niyato, and K.A. Raza
Proceedings of IEEE Global Communications Conference Workshop on Robust, Low-Latency and Efficient Federated Learning for 6G-Enabled Internet of Things, 2021. DOI

GC Wkshps 2021 Core-B **Throughput-Efficient Blockchain for Internet-of-Vehicles**.
W. Ni, A. Asheralieva, C. Maple, M.M. Karim, D. Niyato, and Q. Yan
Proceedings of IEEE Global Communications Conference Workshop on Scalable, Secure and Intelligent Blockchain for Future Networking and Communications, 2021. DOI

ISNCC 2021 **A Novel Forwarding and Caching Scheme for Software-Defined Information-Centric Networks**.
K.A. Raza, A. Asheralieva, M.M. Karim, K. Sharif, M. Gheisari, and S. Khan
Proceedings of IEEE International Symposium on Networks, Computers and Communications, 2021. DOI

TNSM 2020 CCF-C, IF-5.3 **DOLPHIN: Dynamically Optimized and Load Balanced PatH for INter-domain SDN Communication**.
Z. Latif, K. Sharif, F. Li, M.M. Karim, S. Biswas, M. Shahzad, and S.P. Mohanty
IEEE Transactions on Network and Service Management, Vol. 18, No. 1, PP. 331-346, March 2021. DOI

CSUR 2020 JCR-Q1, IF-16.6 **SDN Controllers: A Comprehensive Analysis and Performance Evaluation Study**.
L. Zhu, M.M. Karim, K. Sharif, Chang Xu, F. Li, X. Du, and M. Guizani
ACM Computing Surveys, Vol. 53, Issue 6, Dec. 2020. DOI Preprint

CSUR 2020 JCR-Q1, IF-16.6 **A Survey of Network Virtualization Techniques for Internet of Things Using SDN and NFV**.
I. Alam, K. Sharif, F. Li, Z. Latif, M.M. Karim, S.Biswas, B. Nour, and Yu Wang
ACM Computing Surveys, Vol. 53, Issue 2, April 2020. DOI

JNCA 2020 CCF-C, IF-8.7 **A Comprehensive Survey of Interface Protocols for Software Defined Networks**.
Z. Latif, K. Sharif, F. Li, M.M. Karim, S. Biswas, and Y. Wang
Journal of Network and Computer Applications, Vol. 156, P. 102563, Apr. 2020. DOI Preprint

WASA 2018 CCF-C **Quadrant-Based Weighted Centroid Algorithm for Localization in Underground Mines**.
N. Tahir, M.M. Karim, K. Sharif, F. Li, and N. Ahmed
Proceedings of International Conference on Wireless Algorithms, Systems, and Applications, 2018. DOI

Manuscript Under Progress/Review

M.M. Karim et al., "CICSIoT:Content Discovery and Distribution in Clean-slate Information-Centric Softwarized Internet-of-Things".

M.M. Karim et al., "Mobility-aware Caching and Slicing Optimization for Information-Centric Software-Defined Internet of Vehicles".

M.M. Karim et al., "Reputation-based Service Provisioning for Blockchain-enabled Multi-tier Computing Networks".

Academic Services

Peer Reviewer **IEEE, Elsevier, ACM Journals, Magazines and Conference Proceedings**.

Achievements

- **Offer** for "**Network Technology Engineer**" from **Huawei Tech. Bangladesh Ltd.**, 2021
- Full-Funded **Chinese Government Scholarship**, Dhaka (Bangladesh), 2016
- **Band 7.0** in IELTS Academic and General Modules, Dhaka (Bangladesh), 2015
- **Offer** for "**Network Engineer**" from **Ericsson**, Xi'an (China), 2015
- **Cisco CCNP** in Routing and Switching, Xi'an (China), 2014
- **2nd Prize**, Cyber Security Alliance Innovation Competition, Beijing (China), 2014
- **Cisco CCNA** in Security, Xi'an (China), 2013
- **Cisco CCNA** in Routing and Switching, Dhaka (Bangladesh), 2012

- **University Scholarship**, Northwestern Polytechnical University, Xi'an (China), 2012
- Full-Funded **Chinese Government Scholarship**, Dhaka (Bangladesh), 2007

Academic Projects

Sep. 2016 - Jun. 2021 **Beijing Institute of Technology (BIT), Beijing**.

- Traffic Flow Optimization for Multi-Layer Software-Defined Information-Centric UAV-assisted Flying Ad-hoc Network (FANET)
- Clean-slate Software-Defined Information-Centric Solution for Internet of Things (IoT) Network
- Software-Defined Information-Centric Mobility and Caching Solution for 5G Vehicular Ad-hoc Networks (VANET)
- Qualitative and Quantitative Evaluation of SDN Controllers

Sep. 2012 - Jan. 2015 **Northwestern Polytechnical University (NWPU), Xi'an**.

- Developed a static analysis tool employing pattern-matching techniques to detect errors, perform rule checks, and identify vulnerabilities in C and C++ source code
- Designed a C source code scanner based on lexical and syntax analysis, using open-source tools such as LEX and YACC
- Conducted comprehensive analysis of Windows buffer overflow exploitation techniques using Windows XP, Metasploit, and OllyDbg for stack and heap-based vulnerabilities

Sep. 2008 - Jun. 2012 **Northwestern Polytechnical University (NWPU), Xi'an**.

- Implemented a Secure Wired Local Area Network based on IEEE 802.1X, demonstrating knowledge of the OSI reference model, network layout, functions, and the elements of TCP/IP
- Organized a method for leveraging an open-source, customizable Cloud Operating System, enabling its accessibility throughout the entire campus
- Created a basic Peer-to-Peer (P2P) chat application, leveraging the IPv6 protocol for client-server communication

Technical Skills

Programming	Python and C++
Simulation	NS3, Matlab, Mininet, GNS3
DevOps	Docker, Git, Make, Kubernetes
Miscellaneous	Tex, Markdown, CSS, HTML, JSON, XML

Language

Expert	English
Advanced	Mandarin Chinese
Intermediate	Hindi-Urdu
Native	Bengali